

## WHAT IS CLAIMED IS:

1 1. A digital signal processing apparatus comprising:  
2 an A/D converter for converting an analog input signal  
3 into a digital signal;  
4 a digital filter for performing half-band processing  
5 to a sampling output of a digital signal outputted by said  
6 A/D converter and for attenuating a frequency component  
7 other than a predetermined normal band from a frequency  
8 component included in the sampling output; and  
9 an anti-aliasing circuit for suppressing or removing  
10 noise having an aliasing band, which is caused by the half-  
11 band processing in said digital filter, by using a sign  
12 signal outputted from said digital filter.

1 2. The apparatus according to claim 1, wherein said  
2 anti-aliasing circuit determines whether the output from  
3 said digital filter, which is subjected to said half-band  
4 processing, is a pass signal having the normal band or a  
5 pass signal having the aliasing signal, based on a changing  
6 period of the sign signal outputted from said digital  
7 filter, and suppresses or removes only the pass signal  
8 having the aliasing band.

1 3. The apparatus according to claim 1, wherein said  
2 anti-aliasing circuit comprises:  
3 a period measuring circuit for measuring a changing

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period of the sign signal outputted by said digital filter;  
a threshold holding circuit for holding a period of an  
intermediate frequency between the normal band and the  
aliasing band;

a comparator for comparing and determining whether or  
not the period measured by said period measuring circuit is  
larger than the threshold which is set to said threshold  
holding circuit and for outputting a shift control signal  
when it is determined that the period measured by said  
period measuring circuit is not larger than the threshold;  
and

a shift register for shifting a signal which is  
inputted from said digital filter and is stored, based on  
said shift control signal, and for suppressing an amplitude  
of the aliasing noise.

4. The apparatus according to claim 3, wherein said  
anti-aliasing circuit further comprises a shift value  
setting register, to which the number of shift bits is set  
when the signal, which is inputted from said digital filter  
and is stored, is subjected to shift processing by said  
shift register.

5. The apparatus according to claim 3, wherein said  
anti-aliasing circuit further comprises a delay circuit for  
delaying the output from said digital filter by a delay  
time which is taken by the measurement by said period

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5 measuring circuit and the comparison calculation by said  
6 comparator.

1 6. The apparatus according to claim 1, wherein said  
2 anti-aliasing circuit comprises:

3 a period measuring circuit for measuring a changing  
4 period of the sign signal which is outputted by said  
5 digital filter;

6 a threshold holding circuit for holding a period of an  
7 intermediate frequency between the normal band and the  
8 aliasing band;

9 a comparator for comparing and determining whether or  
10 not the period measured by said period measuring circuit is  
11 larger than the threshold set to said threshold holding  
12 circuit and for outputting a clear signal when it is  
13 determined that the period is not larger than the  
14 threshold; and

15 a delay circuit for delaying the output from said  
16 digital filter by a delay time which is taken by the  
17 measurement of said period measuring circuit and the  
18 comparison calculation of said comparator and for erasing a  
19 signal during delay processing when said clear signal is  
20 inputted.

1 7. A digital signal processing apparatus comprising:

2 an A/D converter for converting an analog input signal  
3 into a digital signal;

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4 a digital filter for performing half-band processing  
5 to a sampling output of a digital signal outputted by said  
6 A/D converter and for attenuating a frequency component  
7 other than a predetermined normal band from a frequency  
8 component included in the sampling output;

9 an edge-detection circuit for detecting an edge of a  
10 sign signal which is outputted by said digital filter and  
11 for generating a set pulse;

12 a period measuring circuit for measuring a changing  
13 period of the sign signal which is outputted by said  
14 digital filter;

15 a threshold holding circuit for holding a period of an  
16 intermediate frequency between a normal band and an  
17 aliasing band;

18 a comparator for comparing and determining whether or  
19 not the period measured by said period measuring circuit is  
20 larger than the threshold held by said threshold holding  
21 circuit and for outputting a reset pulse when it is  
22 determined that the period is not larger than the  
23 threshold; and

24 a detection register for inputting said set pulse so  
25 as to be in a set state and outputting a first level and  
26 for inputting said reset pulse so as to be in said reset  
27 state and outputting a second level.

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